

**DOCKET NO.: BTG0008-100 (142769US01)****PATENT****In the Claims:**

Please amend claims 115, 128, 129, 136, 143, 144, and 151 as follows:

1-111. (canceled).

112. (previously presented) A peptide comprising the amino acid sequence SEQ ID NO:1.

113. (previously presented) The peptide of claim 112 wherein the peptide is 7 to 50 amino acids in length.

114. (previously presented) The peptide of claim 112 comprising the amino acid sequence SEQ ID NO:2.

115. (currently amended) The peptide of claim 114 wherein the peptide ~~is 7 to 50~~ is up to 50 amino acids in length.

116. (previously presented) A peptide comprising SEQ ID NO:1 and other gliadin or non-gliadin sequence.

117. (previously presented) The peptide of claim 116 wherein the other gliadin sequence is from wheat, rye, barley, oats, or triticale.

118. (previously presented) A peptide comprising SEQ ID NO:1 and a non-gliadin sequence.

119. (previously presented) The peptide of claim 112, 116, or 118 which is a fusion protein.

120. (withdrawn) A peptide comprising:

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a) a mutant gliadin protein comprising at least one mutation in the epitope <sup>62</sup>PQPQLPY<sup>68</sup>, wherein the mutation decreases the ability of the epitope to induce a T cell response; or

b) a fragment of the mutant protein of a), wherein the fragment is at least 15 amino acids long and comprises the mutated PQPQLPY sequence.

121. (withdrawn) The peptide of claim 120 wherein the glutamine residue at position 65 is mutated.

122. (withdrawn) The peptide of claim 121 wherein the glutamine residue at position 65 is substituted by a histidine, tyrosine, tryptophan, lysine, proline, or arginine residue.

123. (previously presented) An analogue of a peptide comprising the amino acid sequence SEQ ID NO:1, wherein the analogue is capable of being recognised by a T cell receptor that recognises the peptide, wherein the analogue is not more than 50 amino acids in length.

124. (withdrawn) A polynucleotide comprising a coding sequence that encodes a peptide of claim 112, 116, 118, or 120.

125. (withdrawn) The polynucleotide of claim 124 further comprising one or more regulatory sequences operably linked to the coding sequence, wherein the one or more regulatory sequences are capable of securing the expression of the coding sequence in a cell.

126. (withdrawn) The polynucleotide of claim 125 wherein the one or more regulatory sequences allow expression of the coding sequence in a prokaryotic or mammalian cell.

127. (withdrawn) The polynucleotide of claim 124 which is a vector or which is in the form of a vector.

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128. (currently amended) A product comprising two or more of:

a peptide comprising the amino acid sequence SEQ ID NO:1, or a fusion protein thereof;

a peptide 7 to 50 amino acids in length comprising the amino acid sequence SEQ ID NO:1, or a fusion protein thereof;

a peptide comprising the amino acid sequence SEQ ID NO:2, or a fusion protein thereof;

a peptide ~~7 to 50~~ up to 50 amino acids in length comprising the amino acid sequence SEQ ID NO:2, or a fusion protein thereof;

a peptide comprising SEQ ID NO:1 and other gliadin or non-gliadin sequence, or a fusion protein thereof;

a peptide comprising SEQ ID NO:1 and other gliadin or non-gliadin sequence, wherein the other gliadin sequence is from wheat, rye, barley, oats, or triticale, or a fusion protein thereof;

a peptide comprising SEQ ID NO:1 and a non-gliadin sequence, or a fusion protein thereof; and

an analogue of a peptide comprising the amino acid sequence SEQ ID NO:1 which is capable of being recognised by a T cell receptor that recognises a peptide comprising the amino acid sequence SEQ ID NO:1, wherein the peptide analogue is not more than 50 amino acids in length.

129. (currently amended) A composition comprising a peptide, an analogue, or a composition, and a pharmaceutically acceptable carrier or diluent, wherein the peptide is:

a peptide comprising the amino acid sequence SEQ ID NO:1, or a fusion protein thereof;

a peptide 7 to 50 amino acids in length comprising the amino acid sequence SEQ ID NO:1, or a fusion protein thereof;

a peptide comprising the amino acid sequence SEQ ID NO:2, or a fusion protein thereof;

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a peptide ~~7 to 50~~ up to 50 amino acids in length comprising the amino acid sequence SEQ ID NO:2, or a fusion protein thereof;

a peptide comprising SEQ ID NO:1 and other gliadin or non-gliadin sequence, or a fusion protein thereof;

a peptide comprising SEQ ID NO:1 and other gliadin or non-gliadin sequence, wherein the other gliadin sequence is from wheat, rye, barley, oats, or triticale, or a fusion protein thereof; or

a peptide comprising SEQ ID NO:1 and a non-gliadin sequence, or a fusion protein thereof;

wherein the analogue is an analogue of a peptide comprising the amino acid sequence SEQ ID NO:1 which is capable of being recognised by a T cell receptor that recognises a peptide comprising the amino acid sequence SEQ ID NO:1, wherein the peptide analogue is not more than 50 amino acids in length; and

wherein the ~~product~~ composition is two or more of the foregoing peptides or analogues.

130. (previously presented) The composition of claim 129 comprising at least one peptide comprising the amino acid sequence SEQ ID NO:1 and a gliadin epitope from wheat, rye, barley, oats, or triticale.

131. (previously presented) The composition of claim 130 comprising a gliadin epitope from each of wheat, rye, barley, oats, and triticale.

132. (withdrawn) A cell comprising a polynucleotide of claim 124 which has been transformed with such a polynucleotide.

133. (withdrawn) The cell of claim 132 which is a prokaryotic cell or a mammalian cell.

134. (withdrawn) The cell of claim 132 which is a cell of a graminaceous monocotyledonous species.

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135. (withdrawn) The cell of claim 134 which is a cell of wheat, maize, oats, rye, rice, barley, triticale, sorghum, or sugar cane.

136. (currently amended) A kit comprising a peptide of claim 112, 116, or 118 ~~118, or 120~~, and a means to detect the recognition of the peptide by a T cell.

137. (previously presented) The kit of claim 136 wherein the means to detect recognition comprises an antibody to IFN- $\gamma$ .

138. (previously presented) The kit of claim 137 wherein the antibody is immobilised on a solid support and, optionally, comprises a means to detect the antibody-IFN- $\gamma$  complex.

139. (withdrawn) A transgenic plant or plant seed comprising a plant cell of claim 124.

140. (withdrawn) A transgenic plant cell callus comprising a plant cell of claim 134.

141. (withdrawn) A food that comprises a protein of claim 120.

142. (withdrawn) The food of claim 141 wherein a peptide comprising a) a mutant gliadin protein comprising at least one mutation in the epitope  $^{62}$ PQPQLPY $^{68}$ , wherein the mutation decreases the ability of the epitope to induce a T cell response, or b) a fragment of the mutant protein of a), wherein the fragment is at least 15 amino acids long and comprises the mutated PQPQLPY sequence, is used instead of wild-type gliadin.

143. (currently amended) A method of diagnosing coeliac disease or susceptibility to coeliac disease in an ~~animal~~ individual comprising:

a) contacting the individual or a sample from the ~~animal~~ individual with a peptide of claim 112, 116, or 118 ~~118, or 120~~; and

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b) determining ~~*in vivo*~~ whether a T cell in the sample recognises the peptide, wherein recognition by the T cell indicates that the ~~animal~~ individual has or is susceptible to coeliac disease.

144. (currently amended) The method of claim 143 wherein a) comprises administering the peptide to the skin of the ~~animal~~ individual, and b) comprises detecting the presence of inflammation at the site of administration, wherein detection of inflammation indicates that the T cell of the ~~animal~~ individual recognises the peptide.

145. (previously presented) The method of claim 143 wherein the sample is a blood sample.

146. (previously presented) The method of 143 wherein the T cell is not re-stimulated in an antigen specific manner *in vitro* before determining *in vitro* whether the T cell in the sample recognises the peptide.

147. (previously presented) The method of claim 143 wherein the recognition of the peptide by the T cell is determined by detecting the secretion of a cytokine from the T cell.

148. (previously presented) The method of claim 147 wherein the cytokine is IFN- $\gamma$ .

149. (previously presented) The method of claim 147 wherein the cytokine is detected by allowing the cytokine to bind to an immobilised antibody specific to the cytokine and then detecting the presence of the antibody-cytokine complex.

150. (previously presented) The method of claim 143 wherein b) comprises measuring whether the peptide binds a T cell receptor.

151. (currently amended) A method of diagnosing coeliac disease or susceptibility to coeliac disease in an ~~animal~~ individual comprising detecting the presence of an antibody that binds to a

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peptide comprising SEQ ID NO:1 in a sample from the ~~animal~~ individual, wherein the presence of the antibody indicates that the individual has or is susceptible to coeliac disease.

152. (withdrawn) A method of determining whether a composition is capable of causing coeliac disease comprising detecting the presence of a peptide capable of being modified by a transglutaminase to produce a peptide comprising SEQ ID NO:1 in the composition, wherein the presence of the peptide indicates that the composition is capable of causing coeliac disease.

153. (withdrawn) The method of claim 152 wherein the detecting comprises contacting the composition with an antibody specific for the peptide which is capable of being modified by a transglutaminase, wherein binding of the antibody to a peptide in the composition indicates that the composition is capable of causing coeliac disease.

154. (withdrawn) A method of preparing an antibody specific to a peptide of claim 112, 116, 118, or 120 comprising administering the peptide to an animal and isolating the antibody from the animal.

155. (withdrawn) A method of preparing a peptide encoded by a polynucleotide of claim 120 comprising:

- a) cultivating a cell comprising a polynucleotide of claim 120 under conditions that allow the expression of the peptide; and, optionally,
- b) recovering the expressed protein.

156. (withdrawn) A method of obtaining a transgenic plant cell comprising transforming a plant cell with a vector of claim 127.

157. (withdrawn) A method of obtaining a crop product comprising harvesting a crop product from a plant of claim 139 or 140.

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158. (withdrawn) The method of claim 157 further comprising processing the harvested product.

159. (withdrawn) The method of claim 157 wherein the plant is a wheat plant and the harvested crop product is grain.

160. (withdrawn) The method of claim 159 wherein the harvested product is further processed into flour or another grain product.

161. (withdrawn) A transgenic plant cell obtainable by the method of claim 156.

162. (withdrawn) A method of treating or preventing coeliac disease comprising administering to an animal the peptide of claims 112, 116, 118, or 120, an analogue of claim 123, a product of claim 128, a composition of claim 129, or an analogue that binds to an epitope of a peptide of claim 112.

163. (withdrawn) The method of claim 162 wherein the treatment or prevention of coeliac disease is by tolerisation.